













## Today's Agenda

<u> </u>		
12:35 – 1:15	Taming the Silent Killer	Dr. Joshua Wynne, MD, MBA, MPH
1:15 – 1:30	Target: BP and Cholesterol Program and Hypertension Tools– American Heart Association	Mindy Cook, BSN
1:30 – 2:30	RN's Role in Hypertension Prevention, Identification and Management	Megan Carlblom, MSN, RN, SCRN Melissa Gilmore, RN, BSN Patricia Spier, RN-BC, PCMH-CCE
2:30 – 3:00	Break (Snacks provided by Essentia Health)	
3:00 – 4:00	Hypertension Medication Management: Improving Adherence	Jayme Steig, PharmD, RPh
4:00 – 5:00	Treating Hypertension in Persons with Diabetes (patient case studies)	Dr. Eric Johnson, M.D.
5:00 - 5:30	Evaluation and Wrap Up	

## Taming the Silent Killer

Joshua Wynne, MD, MBA, MPH
Vice President for Health Affairs and Dean, UND SMHS



#### Disclosure

- I have no relevant conflicts of interest
- I do not receive funding from any company associated with any of the pharmaceutical or other products I will discuss
- I do not receive any commercial funding – period!



#### Goals

- Discuss the risk factors for developing high blood pressure
- Review its symptoms
- Outline the impact of hypertension
- Review the new HBP guidelines
- Discuss the benefit of treatment





## Why High Blood Pressure Matters

- First heart attack: About 7 of every 10 people having their first heart attack have high blood pressure.
- **Heart failure:** About 7 of every 10 people with chronic heart failure have high blood pressure.
- **First stroke:** About 8 of every 10 people having their first stroke have high blood pressure.

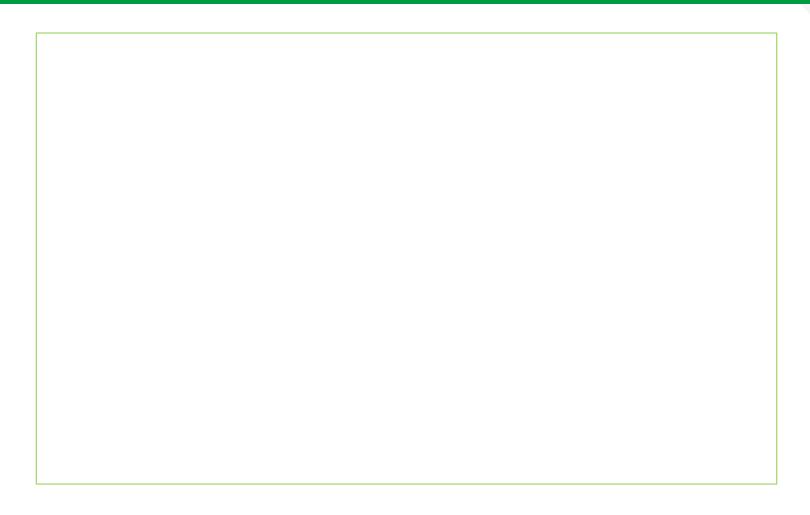


### Why High Blood Pressure Matters

 More than 360,000 American deaths in 2013 included high blood pressure as a primary or contributing cause. That is about 1,000 deaths each day.



#### Common Symptoms With High Blood Pressure





# Symptoms That May be Seen With High Blood Pressure

- Headaches
- Shortness of breath, especially with exertion
- Symptoms related to complications
  - -Chest discomfort
  - Stroke
  - Kidney failure



## High Blood Pressure (HBP)

- Almost a billion people have HBP globally
- Almost half (46%) of US adults have hypertension (32% under the old guidelines)
- Only about half of people with HBP have their condition under good control (61% under old and 47% under new guidelines)
- Hypertension costs the nation \$46 billion annually



## Blood Pressure Levels Vary by Age

Age	Men (%)	Women (%)
20-34	11.1	6.8
35-44	25.1	19.0
45-54	37.1	35.2
55-64	54.0	53.3
65-74	64.0	69.3
75+	66.7	78.5
All	34.1	32.7

Source: http://www.cdc.gov/bloodpressure/facts.htm



#### Risk Factors for and Causes of HBP

- Genetic predisposition (probably polygenetic for most)
- Life-style
  - Obesity
  - High sodium intake
  - Excessive alcohol consumption
- Medications (NSAIDs, stimulants, decongestants, illicit drugs)
- Secondary causes
  - Endocrine
  - Renal/renovascular



#### Causes of HBP

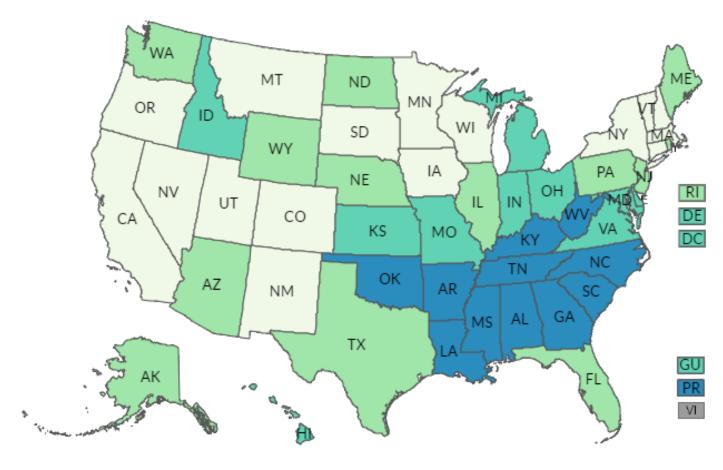
Essential

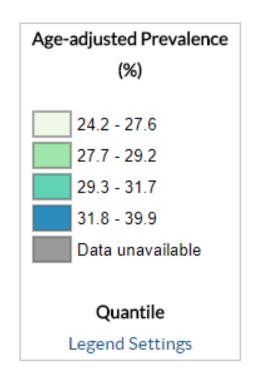


2015

Adults who have been told they have high blood pressure (variable calculated from one or more BRFSS questions) (Age-adjusted Prevalence)

View by: Overall Response: Yes









#### Classification of Blood Pressure

- Four new BP categories based on the average of two or more inoffice blood pressure readings: Normal: < 120 mm Hg systolic BP (SBP) and < 80 mm Hg diastolic BP (DBP)</li>
- Elevated: 120-129 mm Hg SBP and < 80 mm Hg DBP</li>
- Stage 1 Hypertension: 130-139 mm Hg SBP or 80-89 mm Hg DBP and
- Stage 2 Hypertension: ≥ 140 mm Hg SBP or ≥ 90 mm Hg DBP





#### Classification of Blood Pressure

Blood-Pressure Category	Definition		
Normal	Systolic pressure of <120 mm Hg and diastolic pressure of <80 mm Hg		
Elevated	Systolic pressure of 120–129 mm Hg and diastolic pressure of <80 mm Hg		
Hypertension			
Stage 1	Systolic pressure of 130–139 mm Hg or diastolic pressure of 80–89 mm Hg		
Stage 2	Systolic pressure of ≥140 mm Hg or diastolic pressure of ≥90 mm Hg		

<sup>\*</sup> Definitions are derived from the 2017 American College of Cardiology–American Heart Association Hypertension Guideline.<sup>2</sup> Persons with systolic blood pressure and diastolic blood pressure in different categories should be designated in the higher blood-pressure category. Diagnosis is based on the average of two or more readings taken on two or more occasions.





#### Prevalence of High Blood Pressure

- Substantially higher prevalence of HBP under the new guideline (46% vs. 32% of adults)
- Some of the additional adults meeting the new definition of HBP will require only nonpharmacological treatment (people with BPs between 130-139 mm Hg SBP or 80-89 mm Hg DBP may respond to only lifestyle changes)
- However, it remains unclear as to the percentage of adults newly classified as hypertensive for whom a medication will be needed



#### **Blood Pressure Goals for HBP**

- For adults with confirmed hypertension and known CVD, or 10year ASCVD event risk of 10% or higher, a BP goal of less than 130/80 mm Hg is recommended
- For adults without additional markers of increased CVD risk, a BP goal of less than 130/80 mm Hg may be reasonable
- The totality of the available information provides evidence that a lower BP target is generally better than a higher BP target





#### **Blood Pressure Goals for HBP**

- The SBP target recommended in the new guideline (<130 mm Hg) is higher than that which was used in the SPRINT trial (<120 mm Hg)</li>
- More about the SPRINT trial to follow!





#### **HBP Measurement and Management**

- Evaluation
  - Confirm diagnosis with at least two BP measurements on at least two occasions
  - Standard approach seated, legs uncrossed, back supported, after 5 minute rest, propersized cuff
  - Initial laboratory testing renal, lipid and thyroid tests and an electrocardiogram



#### **HBP Measurement**

- Use self-measured blood pressure monitoring (SMBP) to diagnose and reassess HBP
- SMBP refers to the regular measurement of BP by the patient outside of the clinic setting.
- SMBP can be used to confirm the diagnosis of HBP based on elevated office readings and for titration of BP-lowering medication.
- SMBP can help differentiate between sustained, white coat, and masked hypertension.

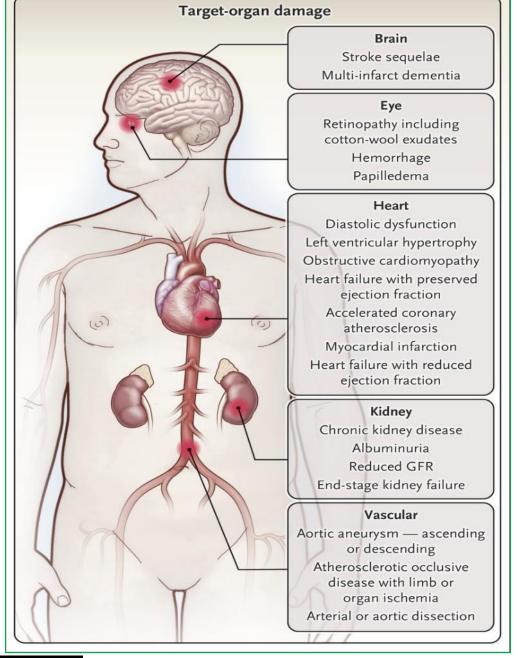




## **HBP Management**

- Lifestyle changes
  - Sodium restriction (<1500 mg/day)</li>
  - Exercise
  - Moderation of alcohol intake
  - Enhanced intake of potassium-rich foods
  - Minimize use of NSAIDs
  - Cessation of tobacco use
- Medication







#### What Is The Optimal Blood Pressure?



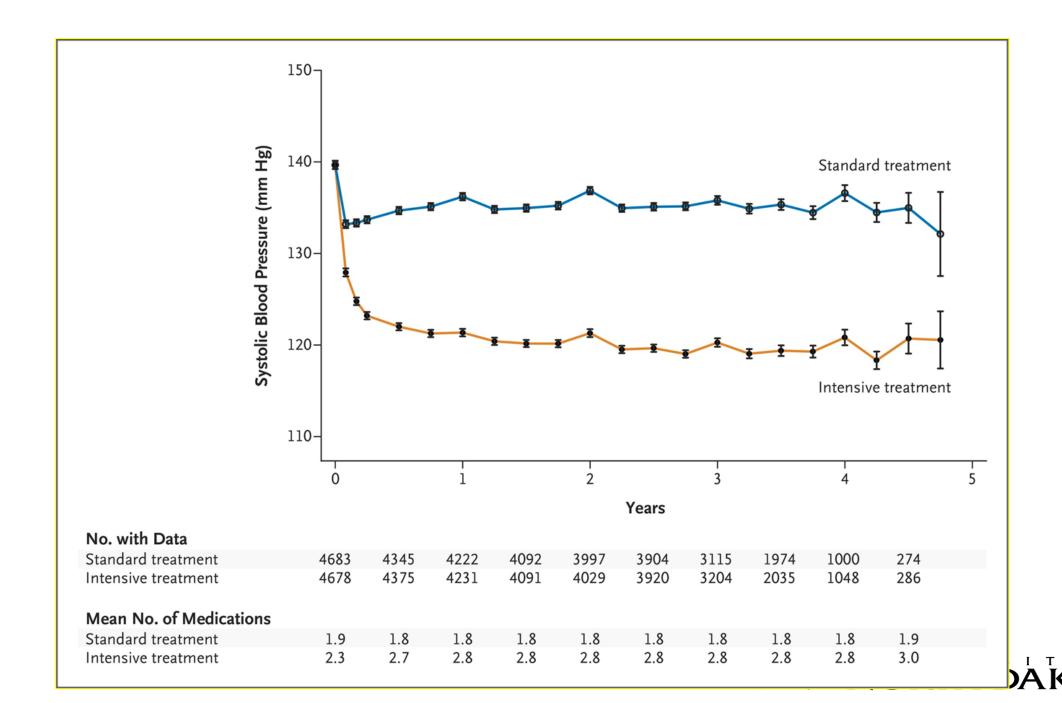
**Systolic Blood Pressure Intervention Trial** 



#### What Is The Optimal Blood Pressure?

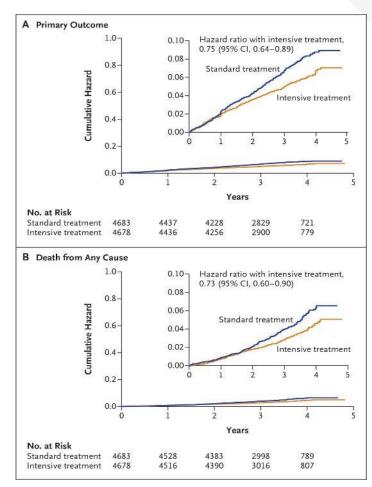
- Target of <140 systolic vs. <120 systolic</li>
- Two drugs on average needed in standard BP group vs. 3 drugs in intensive group
- Study stopped early because of greater benefit in the intensive treatment group





#### What Is The Optimal Blood Pressure?

- Composite endpoint lower by 25% in the intensive treatment group
- All-cause mortality lower by 27%
- Cardiovascular mortality lower by 43%
- Heart failure lower by 38%





#### The Bottom Line

- Don't assume that "all is well" if you don't have any symptoms – we don't call hypertension the Silent Killer for nothing
- Don't assume that "White Coat Hypertension" can be ignored
- Until proven otherwise, with the provisos mentioned, remember that "lower is better" for most patients (especially those ≥ 50 years) with high blood pressure



#### Wynne's Blood Pressure Goals

- All other things being equal, the lower the better (remembering that this is controversial)
- Extra caution required in the truly elderly, frail, bed-ridden, and patients with multiple comorbidities (especially prior stroke)
- Assumes that the patient does not have limiting symptoms due to medications
- Assumes that the patient has no biochemical or other signs of deleterious effects of treatment





## Thank you!

# Questions?



# Target: BP and Cholesterol Programs and Hypertension Tools

An overview of the AHA/AMA initiative to help physicians and patients control high blood pressure and cholesterol.

Mindy Cook, BSN

## Disclosures









# Hypertension – What's New?

Whelton PK, et al.

2017 High Blood Pressure Clinical Practice Guideline

#### 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

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#### THE STEPS AND TIMELINE TO CREATE GUIDELINES

By AMERICAN HEART ASSOCIATION NEWS -

Volunteers from the American Heart Association, and other health organizations the AHA partners with, select the topic, choose committee members and chair.

> 6 MONTHS Committee creates a set of questions to update recommendations or make new ones.

1 MONTH

3 MONTHS

Committee members review and analyze research results. Writing committee volunteers draft and vote on recommendations.

3-4 MONTHS STEP Recommendations are peer reviewed by outside experts.

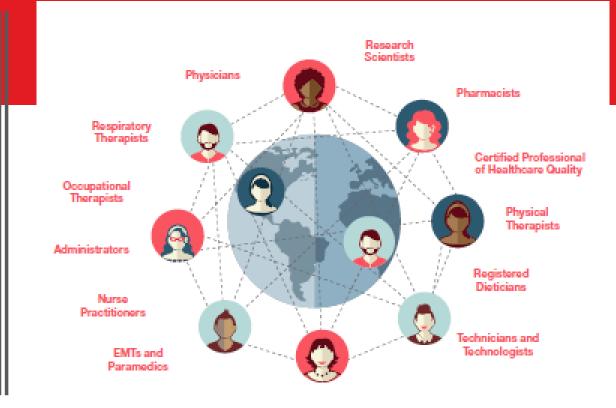
12+ MONTHS

The guideline is

prepared for printing, publication and distribution.

Source: American Heart Association Science and Medicine Department

Published: November 10, 2017



#### 2017 AHA Scientific Sessions









#### KNOW YOUR BLOOD PRESSURE

-AND WHAT TO DO ABOUT IT

By AMERICAN HEART ASSOCIATION NEWS



The newest guidelines for hypertension:

#### NORMAL BLOOD PRESSURE

\*Recommendations: Healthy lifestyle choices and yearly checks.

#### **ELEVATED BLOOD PRESSURE**

\*Recommendations: Healthy lifestyle changes, reassessed in 3-6 months.

#### HIGH BLOOD PRESSURE / STAGE 1

\*Recommendations: 10-year heart disease and stroke risk assessment. If less than 10% risk, lifestyle changes, reassessed in 3-6 months. If higher, lifestyle changes and medication with monthly follow-ups until BP controlled.

#### HIGH BLOOD PRESSURE STAGE 2

\*Recommendations: Lifestyle changes and 2 different classes of medicine, with monthly follow-ups until BP is controlled.

\*Individual recommendations need to come from your doctor. Source: American Heart Association's journal Hypertension Published Nov. 15, 2017

#### **Blood Pressure Categories**



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 - 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 - 139	or	80 - 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

## Hypertension Guideline











A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

The updated guideline recommends BP-lowering medication for those with stage 1 hypertension with clinical CVD or a 10-year risk of ASCVD10% or greater, as well as for those with stage 2 hypertension.

For stage 2, the recommendation is 2 BP-lowering medications in addition to healthy lifestyle changes, which is a more aggressive treatment standard—previous guidelines recommended starting patients on only 1 BP-lowering medication.









- ASCVD risk calculator: updated guideline provides recommendations for patients with clinical CVD and makes new recommendations utilizing ASCVD calculator
- Race/Ethnicity specific recommendations: Morbidity and mortality attributed to hypertension are more common in black and Hispanic adults compared with white adults.
- Follow up and Induction: adults starting a new or adjusted drug regimen to treat hypertension should follow up monthly until goal is achieved
- No prehypertension: The updated guideline eliminates the term prehypertension and instead uses the term elevated BP for a systolic BP of
- 120 to 129 mm Hg and a diastolic BP of less than 80 mm Hg.
- More hypertension patients: Because the new definition of hypertension is lower (130/80 mm Hg), more people will be classified as having hypertension. However, most of these new patients can prevent hypertension-related health problems through lifestyle changes alone.



- Hypertensive urgency vs hypertensive emergency: Hypertensive urgencies are associated with severe BP elevation in otherwise stable patients without acute or impending change in target organ damage or dysfunction. Hypertensive emergencies are severe elevations in BP associated with evidence of new or worsening target organ damage.
- Focus on accurate measurements: To ensure accurate measurements,
  make sure the instrument you are using is properly calibrated. The updated
  guideline also stresses the basic processes for accurately measuring BP,
  including some simple yet critical actions before and during measurements.
- Focus on self-monitoring: Office BPs are often higher than ambulatory or home BPs, so the updated guideline emphasizes having patients monitor their own BP for hypertension diagnosis, treatment, and management



- Treatment recommendations: The updated guideline presents new treatment recommendations, which include lifestyle changes as well as BP-lowering medications. These lifestyle changes can reduce systolic BP by approximately 4 to 11 mm Hg for patients with hypertension, with the biggest impacts being changes to diet and exercise.
- Lifestyle Recommendations: DASH Diet, Weight Optimization, Physical activity include 90 to 150 minutes of aerobic and/or dynamic resistance exercise per week and/or 3 sessions per week of isometric resistance exercises, limit alcohol consumption to 2 or fewer drinks daily for men and no more than 1 drink daily for women



- New targets for comorbidities: For patients with comorbidities, the updated guideline generally recommends prescribing BP-lowering medications in patients with clinical CVD and new stage 1 or stage 2 hypertension to target a BP of less than 130/80 mm Hg (this was previously less than 140/90 mm Hg).
- The guideline recommends different follow-up intervals based on the stage of hypertension, type of medication, level of BP control, and presence of target organ damage.





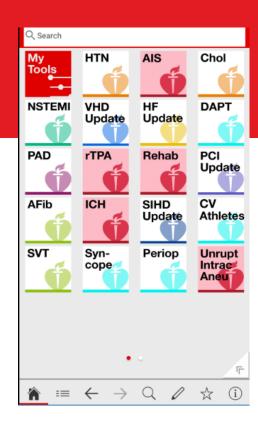
#### AHA Guidelines On-the-Go

American Heart Association, Inc Medical ★★★★★ 100 ♣ Everyone

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Add to Wishlist

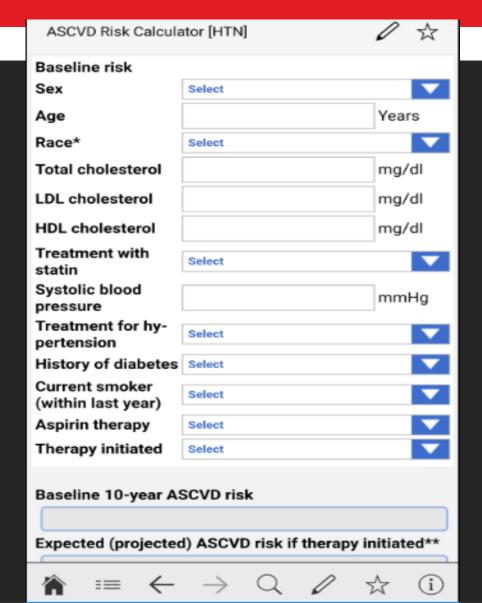
Install



# AHA Guidelines On the Go Available for Android and iPhone



# Navigation and Tools





#### HTN

Executive Summary

#### ASCVD Risk Calculator

HTN

HTN BP Thresholds & Recom.Tx

# HTN Dx & Mgmt. of HTN Crisis

#### HTN

Mgmt. in Acute ICH

#### Mgmt. in Acute Isch. Stroke

#### Mgmt. in CKD

#### HTN Mgmt. in Previous H/O Stroke

#### HTN

HTN

Mgmt. in SIHD





#### HTN White

HTN

#### HTN

White Coat HTN w/o Drug Tx









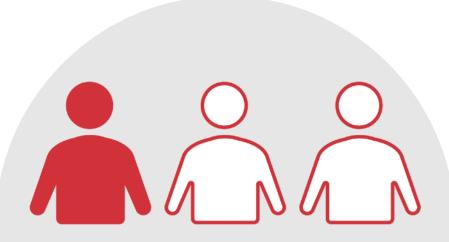








# Target: BP



1 in 3 Americans is living with the silent killer, putting them at an increased risk for heart attack, heart failure, stroke and other health problems<sup>1</sup>

#### It's time to get serious

The number of people with high blood pressure is growing at an alarming rate. Currently 1 in 3 Americans, about 85 million people, is living with the silent killer, putting them at an increased risk for heart attack, heart failure, stroke and other health problems.

Fortunately, high blood pressure can be treated and managed. As you know, maintaining lower blood pressure can reduce the risks of significant health events and lead to better outcomes. That's why we need to work together, along with patients, to build a healthier nation.

It starts with the comprehensive national initiative—Target: BP™. We're counting on you, in your important role, to help raise awareness of high blood pressure's impact and to work with your patients to help them get it controlled. The materials outlined in the Tools and Resources portion of this deck are available to support your hypertension management efforts.











Benjamin EJ, Blaha MJ, Chiuve SE, et al; American Heart Association Statistics Committee and Stroke Statistics
 Subcommittee. Heart Disease and Stroke Statistics—2017 update: a report from the American Heart Association.
 Circulation. 2017;135(10):e146-e603.



#### Initiative Process

#### **Working toward a healthier America**



#### **Step 1: Customize a Plan**

After registration, a Target: BP™ staff member will work with you to create a customized implementation plan for your practice. At the center of every plan is the Target: BP Improvement Program. The BP Improvement Program leverages the M.A.P. framework, which focuses on three key aspects of successful care for patients with hypertension.<sup>2</sup>

Target: BP supports you by offering access to:

- Tools, resources and improvement plans, including a customizable algorithm with proven efficacy
- Best practices and success stories from other Target: BP participants
- Easy-to-use tools and resources to help your patients better understand the importance of controlling blood pressure



## Step 2: Measure Improvement and Report Results

Staff will offer support to you by helping to identify quality improvements, providing guidance on data reporting and giving feedback on measurement results.



#### **Step 3: Promote Recognition**

Target: BP recognizes and rewards participating practices for improving the outcomes of their patients with hypertension. All practices who join Target: BP and submit patient data will be recognized, and those that achieve a 70-percent or greater blood pressure control rate within their adult patient population will receive additional incentives to acknowledge their above-and-beyond efforts.

2. Boonyasai RT, Rakotz MK, Lubomski LH, et al. Measure accurately, Act rapidly, and Partner with patients: an intuitive and practical three-part framework to guide efforts to improve hypertension control. *J Clin Hypertens (Greenwich)*. 2017;19(7):684-694. Copyright 2015 American Medical Association and The Johns Hopkins University. All Rights Reserved. This tool was adapted with permission of the American Medical Association and the Johns Hopkins University. All Rights Reserved. This tool can be found at https://www.ama-assn.org/ama-johns-hopkins-blood-pressure-resources.

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# Target: BP™ Improvement Program



#### **Target: BP Improvement Program**

The Target: BP Improvement Program leverages the latest clinical evidence to make it easier for you to more effectively manage your patients with high blood pressure. The BP Improvement Program has three main parts, which can be remembered using the acronym M.A.P.: Measure accurately; Act rapidly; and Partner with patients, families and communities.



# *M* is for MEASURE blood pressure accurately every time

Proper measurement is critical to controlling blood pressure. Build a protocol to ensure accuracy of blood pressure readings.



# A is for ACT rapidly to address high blood pressure readings

This step requires rapid action during a patient visit and prioritizes follow-up appointments and a clear treatment plan to help patients achieve blood pressure control.



# P is for PARTNER with patients, families and communities to promote self-management

Real change comes when patients take ownership of their health. Engage with patients, their families and communities helps to promote sustainable lifestyle change, thus supporting the improvement of overall health.

The BP Improvement Program uses a team-based care approach where data drives improvement. Your practice will utilize hypertension quality-improvement metrics to monitor the impact of your efforts. Furthermore, you are encouraged to reach **out** to uncontrolled patients who need to return to the office for follow-up. Typically, within a six-month period, a practice that implements the BP Improvement Program can expect to see lower blood pressure and improved control rates in patients with hypertension.











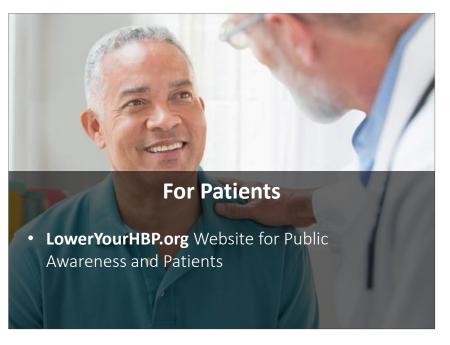


# Target: BP™ Resources

#### Resources for every step of the process

In order to ensure a successful experience with Target: BP, valuable resources are being made available to you and your practice, as well as to the general public and to patients who have made the choice to re-engage with their high blood pressure management plan. Used together, your practice will be more prepared to treat the condition, and patients will be aware of what they need to do to get and stay healthy.

















# Physician Resources – Conversation Guide

#### **Productive in-office conversations**

When a patient takes that first step to re-engage, it's crucial that your exchange with him or her is meaningful.

To help facilitate that objective, use this comprehensive conversation guide to enhance patient conversations around hypertension. Covering such topics as the dangers of high blood pressure, treatment approaches and home monitoring instruction (also known as SMBP) among others, this guide supports and encourages a positive back-and-forth.

Designed to ensure patient retention of key points, this bilingual guide is tabbed for easy access to each section and written at a level that is appropriate for patients.













# Recognition—Data Overview



#### **Data submission**

The data submission process occurs annually, beginning in the first quarter of each year. You will be notified of the opening of the submission window via the Target: BP Newsletter.

Your practice will need to submit data for the prior calendar year to calculate the blood pressure control rate measure based on NQF #0018/PQRS #236/ACO #28.\*

Participating sites will receive a message if the data they submit has errors. Data will be saved as a draft with errors to allow the practice to review and resolve the issue(s).

\*NQF #0018 is endorsed by the National Quality Forum (NQF). In CMS programs, it's designated as "PQRS #236." It's also used for quality benchmarking and reported as ACO #28 for accountable care organizations (ACOs) participating in the Medicare Shared Savings Program.





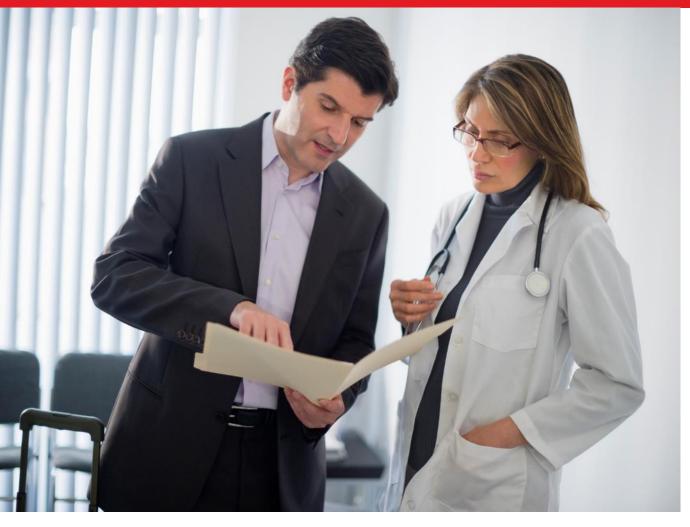








# Recognition—Data Overview



#### Qualifying data to provide

- Number of adult patients with a diagnosis of hypertension (measure denominator)
- Number of adult patients with a diagnosis of hypertension whose blood pressure was controlled at <140/90 mm Hg (measure numerator)

#### Data inclusion/exclusion:

Target: BP™ collects data for adult patients ages 18 to 85 for the reporting year data.

Patients with end-stage renal disease, dialysis, renal transplant or pregnancy are excluded from this patient population

#### Additional patient population elements:

Age, gender, race and ethnicity data (for the Million Hearts Hypertension Prevalence Estimator Tool)













# Recognition Program

#### The right rewards at the right time

The Target: BP™ Recognition Program was designed to allow practice sites and health systems to get the recognition they deserve for making a commitment to prioritize blood pressure management within the patient populations they serve. This program rewards Target: BP registrants who have set goals and are working to implement clinical protocols to help at-risk patients meet and sustain blood pressure control rates of 70 percent









#### Participant-Level Achievement

Practices that join the Target: BP initiative and submit patient data qualify for recognition



#### Gold-Level Achievement

Practices reaching 70-percent blood pressure control or greater in their patient population will receive premier recognition









#### ANNOUNCING



Check. Change. Control.

CHOLESTEROL

life is why\*

DRIVING MILLIONS TO BETTER CHOLESTEROL MANAGEMENT

# Check. Change. Control.









### For Patients



#### A BASIC INTRODUCTION TO CHOLESTEROL

Cholesterol itself isn't bad. We all have and need it in our bodies. Learn what cholesterol is and how too much of it can contribute to clogged arteries and cardiovascular risk.



#### CAUSES OF HIGH CHOLESTEROL

High cholesterol is most often the result of an unhealthy lifestyle, but also can be caused by genetic abnormalities. Also learn about inherited high cholesterol, called familial hypercholesterolemia.



#### PREVENTING AND TREATING HIGH CHOLESTEROL

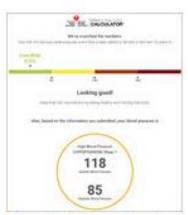
You can lower your cholesterol and reduce your risk of heart disease and stroke. Take control of managing your cholesterol levels by making healthy lifestyle choices and following a sound medical treatment plan.



My Cholesterol Guide



**Cholesterol Animation Library** 

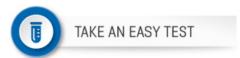


Check. Change. Control. Calculator



#### HDL, LDL AND TRIGLYCERIDES

Learn about "good" cholesterol, "bad" cholesterol and other fats in the blood, and the effects they have on your cardiovascular health.



#### THE IMPORTANCE OF CHOLESTEROL TESTING

Testing for cholesterol is easy and should be a priority in maintaining your health. Find out how cholesterol tests are done and how often to be tested.



#### CHOLESTEROL TOOLS AND RESOURCES

Learn more about cholesterol with our online tracking resources, downloadable information pages and personal stories from people like you.



### For Professionals

#### Guidelines and Statements

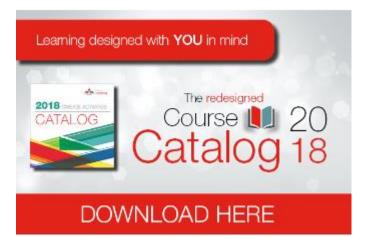
- 2017 Focused Update of the 2016 ACC Expert Consensus Decision Pathway on the Role of Non-Statin Therapies for LDL-Cholesterol Lowering in the Management of Atherosclerotic Cardiovascular Disease Risk (opens in a new window)
- 2016 Benefits from Cardiovascular Preventive Therapies Among Medicare Patients: The Million Hearts Longitudinal ASCVD Risk Assessment Tool
- 2013 ACC/AHA Guidelines for Treatment on Blood Cholesterol
- · 2013 ACC/AHA Guideline on the Assessment of CV Risk: From the ACC/AHA Task Force on Practice Guidelines
- 2013 Lifestyle Guidelines
- The Agenda for Familial Hypercholesterolemia: A Scientific Statement From the American Heart Association
- AHA Science Advisory: Omega-3 Polyunsaturated Fatty Acid (Fish Oil) Supplementation & CVD
- · Cardiovascular Health in African Americans
- · Defining Optimal Brain Health in Adults
- Meditation and Cardiovascular Risk Reduction
- · Pet Ownership and Cardiovascular Risk
- · Recommended Dietary Pattern to Achieve Adherence to the AHA/ACC Guidelines
- · Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke



#### ASCVD Risk Calculator

The ASCVD Risk Calculator tool is used to calculate your patients' risk for heart disease and stroke using the 2013 ACC/AHA guidelines

ACCESS NOW





# For Quality Improvement

Despite this evidence, many patients remain untreated or undertreated. Since the publication of the 2013 <u>ACC/AHA Guideline</u> on the <u>Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults</u>, overall statin treatment rates among patients with ASCVD and Diabetes have remained essentially unchanged.

- The rate of appropriate statin therapy for patients with ASCVD were 48.0% before and 47.3% after 2013 guideline publication.
- Patients taking statins 1 year after the guideline was issued, 80% of patients with ASCVD and aged <= 75 years were not on guideline-recommended statin therapy (Tran et al., 2016).





# Steps to Participate

- Step 1: Registration Available Year Round
- All practices should register with the Check. Change. Control. Program whether they would like to submit for Participation or Gold awards or not. Registrants will have access to the latest program information, tools, and resources. To Register, you will need to know: Your organization's total adult (21-75 years) patient population count
- The total number of clinical providers in your organization
- Percentage of your patients that are a race/ethnicity other than white, non-Hispanic
- The total number of clinical locations in your health system. Hint: you can register each location individually or as a system overall.
- Your Electronic Health Record (EHR) System
- Step 2: Participation Award Available from February 5th to June 1st, 2018
- Participants in this recognition category are affirming their commitment to using ASCVD Risk Estimation tools and improving the
  identification ASCVD risk in eligible adult patients. To become a participant, any registrant just needs to answer a few quick
  questions on their use of ASCVD risk estimation tools, their Electronic Health Record's ability to capture this information, and
  affirm their commitment to improvement.

#### Step 3: Gold Award – Available from February 5th to June 1st, 2018

Participants can up their award level by submitting simplified data for a Gold Award. In this category, participants will self-report
their organization's compliance to MIPS measure #438: Statin Therapy for the Prevention and Treatment of Cardiovascular
Disease. Participants will be asked to submit a numerator and denominator value for their practice population for the previous
calendar year, e.g. Applications for 2018 Recognition will contain data from January 1, 2017 – December 31, 2017.



# Recognition Program

#### REGISTER AND BE **RECOGNIZED**

The Check. Change. Control. Cholesterol™ recognition program acknowledges ambulatory health centers and systems in their efforts to reduce heart attacks and strokes by appropriately managing cholesterol in their at-risk patient populations. The program is designed to help participants improve clinical practice while being celebrated for their hardwork and dedication throughout the process.



There are two levels at which your organization may be recognized.

#### Gold Status

Recognizes practices that have 70 percent or more of their adult, at-risk ASCVD (Atherosclerotic Cardiovascular Disease) patient population appropriately managed with Statin therapy.



#### **Participation Status**

Recognizes practices that commit to assessing ASCVD risk and implementing ASCVD risk calculations into their clinical workflows



#### **National Recognition**

Promotion from the AHA and the AMA via media and event recognition

# Media Assets for Community Recognition

Toolkit of template materials and digital assets such as a press release and images (Coming Soon!)





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# PANEL: RN's Role in Hypertension Prevention, Identification and Management

# **Panelists**

Facilitator – Mike Little, MBA (Manager of Primary Care Programs)

Pat Spier, RN-BC, PCMH-CCE (Medical Home Manager)

Megan Carlblom, MSN, RN, SCRN (Stoke Program Manager)

Melissa Gilmore, RN, BSN (Health Coach)

# Disclosures

No conflicts of interest to disclose.

# Focus for Today

Questions for the panelists will be based on the following categories:

Team-based care

Prevention

Assessment

Diagnosis

Intervention

# Questions?

# 2018 Hypertension Summit

# BREAK TIME!

Snacks, Networking and Self-Care





# Hypertension Medication Management: Improving Adherence

Jayme Steig, PharmD, RPh







# **Disclosure**

- I have had no financial relationship over the past 12 months with any commercial sponsor with a vested interest in this presentation.
- I do not plan to discuss any unlabeled or investigational uses of products.



# **Objectives**

- Describe medication classes used in hypertension management protocols
- List barriers to HTN medication adherence, including adverse effects
- Discuss practices and interventions to improve HTN medication adherence

# **Questions to Run On**



- How do I identify patients that are not adherent to their medications?
- How do I engage patients not taking medications as directed?
- What can I do to improve my patients' medication adherence?

# **Thiazide Diuretics**

ACE Inhibitor/ARBs

**Calcium Channel Blockers** 

Other

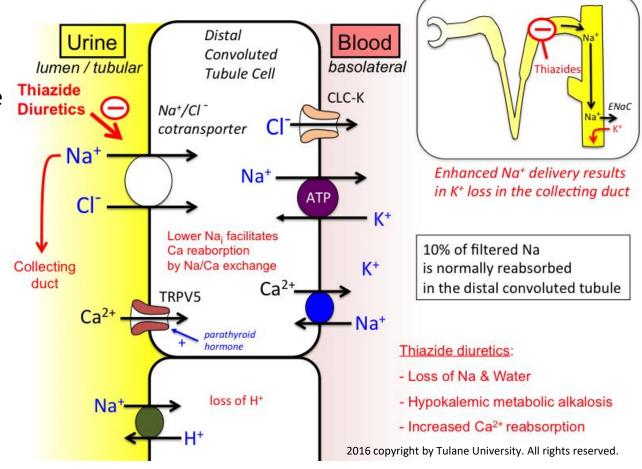
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### HYPERTENSION MEDICATION OVERVIEW

# **Thiazide Diuretics**

#### **Examples**

- Hydrochlorothiazide
- Chlorthalidone
- Chlorothiazide
- Thiazide-like
  - Indapamide
  - Metolazone



# **Thiazide Diuretics Considerations**

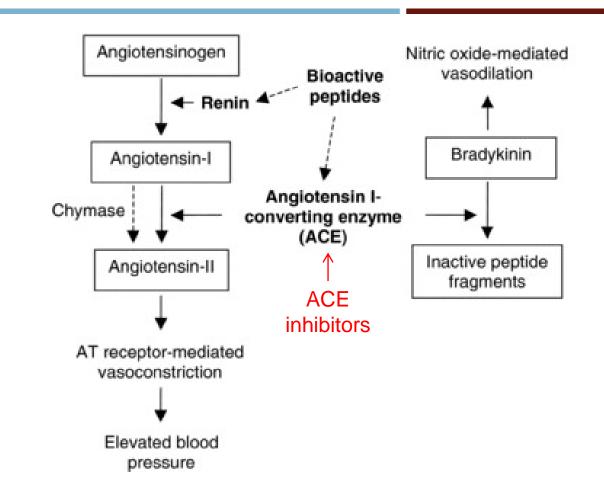
- Adverse Effects
  - Hypokalemia
  - Hyperuricemia
  - Mild glucose tolerance impairment
  - Hyperlipidemia
  - Sun sensitivity

- Drug Interactions
  - NSAIDs
  - Antiarrhythmics
  - Sulfa allergy?
- Contraindications
  - Renal Failure
  - Gout

# **ACE Inhibitors**

#### **Examples**

- Lisinopril
- Enalapril
- Quinapril
- Ramipril
- Captopril
- Benazepril



# **ACE Inhibitor Considerations**

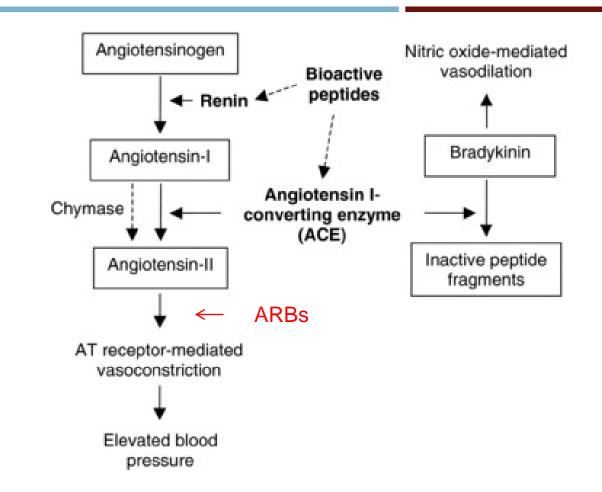
- Adverse Effects
  - Dry cough
  - Hyperkalemia
  - Angioedema
  - Rash (captopril)

- Drug Interactions
  - NSAIDs
  - Potassium supplements and sparing drugs
- Contraindications
  - Pregnancy
  - Renal stenosis

## **Angiotensin II Receptor Blocker (ARB)**

#### **Examples**

- Losartan
- Candesartan
- Irbesartan
- Olmesartan
- Valsartan



## **ARB Considerations**

- Adverse Effects
  - Hyperkalemia
  - Angioedema

- Drug Interactions
  - NSAIDs
  - Potassium supplements and sparing drugs
- Contraindications
  - Pregnancy
  - Renal stenosis

## Calcium Channel Blockers (CCB)

#### **Examples**

- Dihydropyridines (DHP)
  - Amlodipine
  - Felodipine
  - Nifedipine
- Non-DHP
  - Diltiazem
  - Verapamil

- Block L-type calcium channels in vascular smooth muscle
- Relax coronary and peripheral arteries
- 3 classes
  - DHP much more peripheral
  - Non-DHP decrease myocardial contraction

## **CCB Considerations**

- Adverse Effects
  - Hypotension
  - Flushing
  - Edema
  - Headache
  - Gingival hyperplasia
  - Constipation
  - Reflex tachycardia DHP
  - Non-DHP
    - AV block
    - Bradycardia

- Drug Interactions
  - Beta blockers non-DHP
  - Grapefruit juice
- Contraindications
  - SA or AV node disturbances
  - CHF systolic dysfunction

## **Other Classes**

- Beta blockers
- Alpha blockers
- Other diuretics loop, potassium sparing
- Dual alpha and beta blockers
- Direct renin inhibitors
- Direct vasodilators
- Alpha blockers
- Central agonists

## **Combination Therapies**

- 1 + 1 = >2
- Many combined into 1 dosage form
  - HCT ACEI, ARBs, Beta blockers, renin inhibitors
  - ACEI or ARBs with CCBs
  - Renin inhibitor + ARB
- Considerations
  - Flexibility
  - Price
  - Dosing regimen

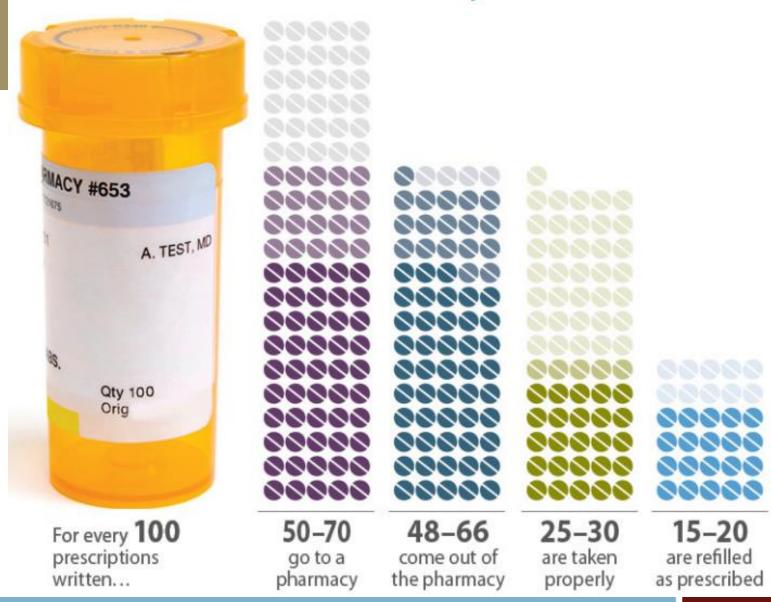
# "Drugs don't work in patients who don't take them."

C. Everett Koop, MD
Former US Surgeon General

#### MEDICATION ADHERENCE BARRIERS

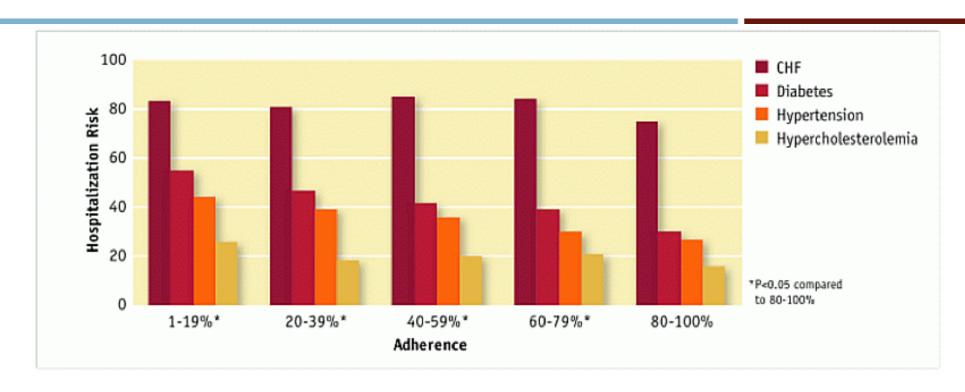
- Medication adherence The patient's conformance with the treatment plan with respect to the timing, dosage, and frequency of medication taken during the prescribed length of time
- Compliance Patient's passive following of provider's orders
- <u>Persistence</u> Duration of time patient takes medication, from initiation to discontinuation of therapy

#### **Medication Adherence by the Numbers\***



https://millionhearts.hhs.gov/files/TipSheet\_HCP\_MedAdh erence.pdf

- Only 51% of Americans with HTN follow long-term medication therapy
- Non-adherence to cardioprotective medications increases risk of death from 50% to 80%



• 33% to 69% of medication-related hospital admissions are due to non-adherence

#### Good News

- Adherence to blood pressure medication is associated with 45% greater odds of blood pressure control compared with being nonadherent
- Improved self-management of chronic diseases results in a cost to savings ratio of 10:1

## **Calculating Medication Adherence**

- Proportion of Days Covered (PDC)
  - AKA Medication Possession Ratio (MPR)
  - PDC = # of days of medication received/# of days in measurement period
  - Example—A patient receives 90 days of medication over a 100-day period = 90% PDC
- Adherence is defined by PDC greater than or equal to 80%

## **HTN Medication Adherence in ND**

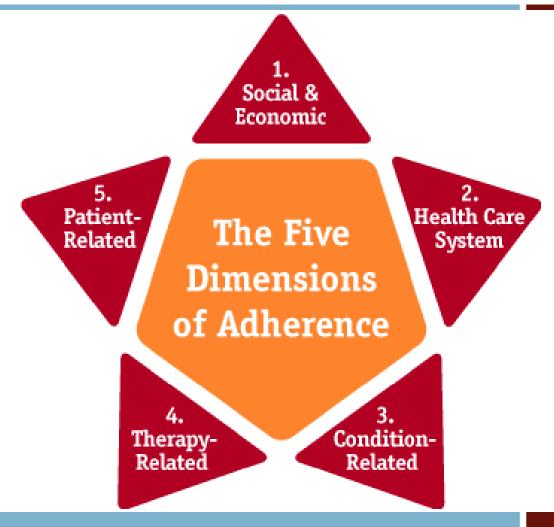
- % of patients with PDC of 80% or greater
  - -Medicare 81.3% 2014
  - -Private Insurance 82% 2016
  - -Medicaid 49%\* 2016
    - Mean PDC = 72.5%

## Calculating Medication Adherence in Practice

- Multiple ways to calculate
  - Pill count
  - Patient self report
  - Pharmacy claims

- Not a perfect measurement
  - Adherence vs. persistence
  - Hospitalizations or other interruptions
  - Changes in therapy
  - Self-reporting accuracy

## **Causes of Medication Adherence**





- Economic
  - Health insurance and medication cost
- Social
  - Low health literacy
  - Difficulty accessing provider or pharmacy
  - Lack of family or social support



- Patient-provider relationship/disparities
- Lack of shared decision making
- Weak system capacity for follow-up
- Lack of continuity of care



- Chronic conditions
- Lack of symptoms
- Severity of symptoms
- Comorbidities
- Depression
- Behavioral disorders



- Complexity of medication regimen or administration
- Frequent changes in medication regimen
- Unpleasant side effects
- The Five
  Dimensions
  of Adherence
- Duration of therapy
- Lack of immediate or noticeable benefit from therapy
- Rapid benefit from therapy



#### Physical

- Visual, hearing, cognitive impairments
- Swallowing problems
- Impaired mobility or dexterity
- Psychological/Behavioral
  - Knowledge about disease/medication
  - Discomfort in asking providers questions
  - Fear of possible adverse effects or addiction
  - Patient beliefs or understandings
  - Patient forgetfulness or carelessness



## **Reasons of Non-Adherence**

The Five
Dimensions
of Adherence

Complexity of treatment

Fear of side effects

Low health literacy

Mental Health Issues



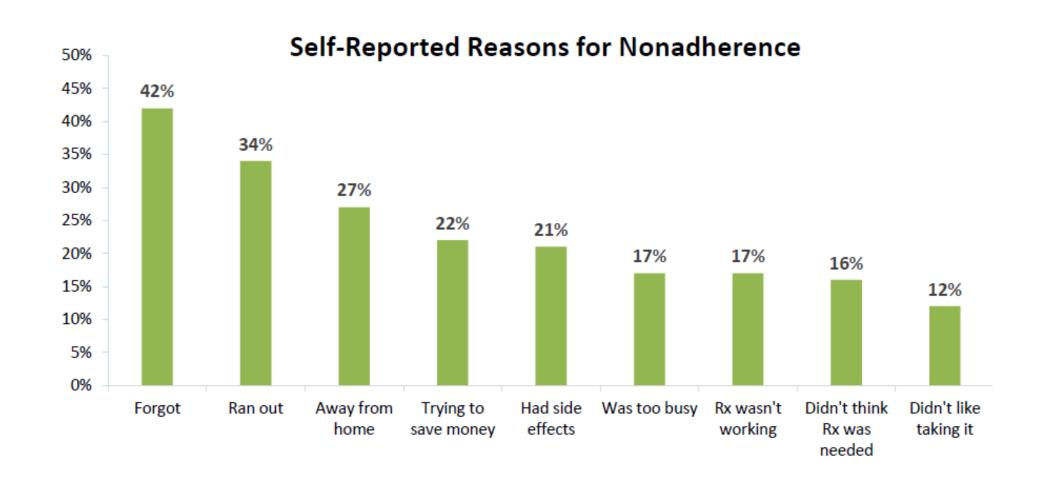
Chronic condition

Lack of belief in treatment benefit

Belief medications are unnecessary or harmful

Cost

#### **Reasons of Non-Adherence**



## **Right Medication**

Right Amount

Right Time

#### IMPROVING MEDICATION ADHERENCE

## **Improving Medication Adherence**

- Need to assess reasons for nonadherence
- Unintentional nonadherence requires different approaches than intentional nonadherence
  - Unintentional packaging, reminders
  - Intentional social determinants

Keep it SIMPLE

## It's SIMPLE

- Simplify the regimen
- mpart knowledge
- Modify patient beliefs and behavior
- Provide communication and trust
- Leave the bias
- E valuate adherence

## Simplify the Regimen

- Adjust timing, frequency, amount and dosage
- Match regimen to patient's activities of daily living
- Recommend taking all medications at the same time of day
- Encourage use of adherence aids/packaging
  - Apps
- Consider changing the situation vs. changing the patient

## **Impart Knowledge**

- Focus on patient-provider shared decision making
- Keep the team informed (physician, nurses, pharmacists, patient, family, etc)
- Advise on medication costs
- Suggest additional internet information sources if patients are interested
- Provide all information clearly in writing and verbally
- Reinforce all discussion often, especially for low-literacy patients
- Use Teach Back

## **Modify Patient Beliefs and Behavior**

- Engage patients to self-manage their condition
- Ensure patients understand the risks if they do not take their medication
- Address fears and concerns
- Provide rewards for adherence

## **Provide Communication and Trust**

- Improve interviewing skills
- Practice active listening/answer questions
- Provide emotional support
- Use plain language

## **Leave the Bias**

- Learn more about health literacy
- Improve patient-centered communication style

## **Evaluating Adherence**

- Patient self-report
- Ask about adherence at every visit
- Review patient's medication containers, noting renewal dates
- Medication Adherence Scales
- Morisky-4—aka Medication Adherence Questionnaire (MAQ)
  - Do you ever forget to take your [condition] medicine?
  - Do you ever have problems remembering to take your [condition] medicine?
  - When you feel better, do you sometimes stop taking your [condition] medicine?
  - Sometimes if you feel worse when you take your [condition] medicine, do you stop taking it?

## It's SIMPLE

#### Key Points

- Use patience and empathy when interacting with patients
- Be mindful of the number of medications prescribed, their frequency and dosing
- Consider cost
- Discuss consequences of non-adherence and tips to improve adherence
- Use team-based care
- Engage your patients, address health literacy, use teach-back techniques

## **Questions to Run On**



- How do I identify patients that are not adherent to their medications?
- How do I engage patients not taking medications as directed?
- What can I do to improve my patients' medication adherence?

# Questions



#### Resources

- Million Hearts
  - https://millionhearts.hhs.gov/tools-protocols/medication-adherence.html#RR
- ND Department of Health
  - https://www.ndhealth.gov/chronicdisease/MillionHearts.htm
- AMA Steps Forward
  - https://www.stepsforward.org/modules/medication-adherence
- Great Plains Quality Innovation Network
  - http://greatplainsqin.org/initiatives/coordination-care/
- ND Assistive
  - <a href="http://ndipat.org/">http://ndipat.org/</a>

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- 2. <a href="http://tmedweb.tulane.edu/pharmwiki/doku.php/all-renal-pharm-drugs">http://tmedweb.tulane.edu/pharmwiki/doku.php/all-renal-pharm-drugs</a>
- 3. <a href="https://www.researchgate.net/publication/221761765">https://www.researchgate.net/publication/221761765</a> Food ProteinDerived Bioactive Peptides Production Processing and Potential Health Benefits
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- 7. <a href="http://www.acpm.org/?MedAdherTT">http://www.acpm.org/?MedAdherTT</a> ClinRef
- 8. <a href="https://www.cdc.gov/dhdsp/docs/med-adherence-evaluation-tool.pdf">https://www.cdc.gov/dhdsp/docs/med-adherence-evaluation-tool.pdf</a>
- 9. <a href="https://www.adultmeducation.com/OverviewofMedicationAdherence\_4.html">www.adultmeducation.com/OverviewofMedicationAdherence\_4.html</a>
- 10. <a href="https://youtu.be/sEMCR7LchcA">https://youtu.be/sEMCR7LchcA</a>

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# Hypertension and Diabetes

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Altru Diabetes Center

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# Objectives

- Learn the role of hypertension in terms of diabetes risk and the development of diabetes complications
- Understand appropriate clinical targets for blood pressure management in diabetes
- Learn non-pharmacologic treatment for hypertension in diabetes
- Learn pharmacologic treatments for hypertension in diabetes
- Apply knowledge learned to clinical scenarios



#### References

- Unless otherwise noted, everything in this talk comes from The American Diabetes Association Standards of Care 2018
- Full document: Diabetes Care Jan 2018 Supplement 1
   http://care.diabetesjournals.org/content/41/Supplement\_1/

   S86
- Abridged for Primary Care: Clinical Diabetes Jan 2018 <a href="http://clinical.diabetesjournals.org/content/36/1/14">http://clinical.diabetesjournals.org/content/36/1/14</a>



# Hypertension and Diabetes

- Independent risk factor for the development of type 2 diabetes
- Treating hypertension is part of global cardiovascular (CHD, Stroke, PAD) risk reduction for persons with diabetes
- Hypertension also increases risk of diabetic kidney disease



# **Diabetes Complications**

#### **Macrovascular Complications**

- Cardiovascular disease
  - -Coronary Heart disease (CHD)
  - -Stroke
  - Peripheral arterial disease (PAD)/amputation

All directly affected by HTN



# **Diabetes Complications**

#### **Microvascular Complications**

- Eye disease (retinopathy)
- Kidney disease (nephropathy)\*
- Nerve disease (neuropathy)

\*directly affected by hypertension



#### Cardiovascular Disease

- Risk:
  - Stroke 2 to 4 times higher
  - Heart Disease 2 to 4 times higher
- ~75% of diabetes patients have high blood pressure (hypertension)
- ~75% of people with diabetes have a dyslipidemia (cholesterol disease)
- Diabetes confers risk about the same as pre-existing
   CVD in persons without diabetes
   Nat Vital Stat Rep;65(4):1–122 2016
   Diabetologia; 57(8):1542–51 2014



#### Cardiovascular Disease

- Heart disease and stroke ~65% of diabetes deaths
- Routine screening of asymptomatic not recommended
- Treat global risk factors (lipids, BP, smoking, etc)



#### Cardiovascular Disease

- Measures of 10 year CHD risk among adults with diabetes have improved in last decade
- CVD morbidity and mortality have also decreased in adults with diabetes

N Engl J Med 2013;368:1613–162 N Engl J Med 2017;376:1407–1418



# Screening for Hypertension and Blood Pressure Goals in Diabetes



#### **Check Blood Pressure**

- Done at every visit (x2?), correct cuff size
- Multiple readings should be made for diagnosis
- Consider lower targets, in appropriate patients if can be achieved without undue burden
- Ambulatory monitoring is encouraged (professional or self), especially if "white coat" hypertension is suspected



#### Children and Adolescents

- BP should be measured at each routine visit
- High-normal blood pressure (SBP or DBP ≥90th percentile for age, sex, and height) or hypertension (SBP or DBP ≥95th percentile for age, sex, and height) should have elevated blood pressure confirmed on three separate days



# Blood Pressure Targets in Diabetes

- Target is <140/<90 for most</li>
- Can be more aggressive if can be achieved without undue burden
- "Patients with confirmed office-based blood pressure
  ≥160/≥100 mmHg should, in addition to lifestyle therapy,
  have prompt initiation and timely titration of two drugs or a
  single-pill combination of drugs demonstrated to reduce
  CV events in patients with diabetes"



Pharmacologic Treatment of Hypertension in Diabetes



#### Common Anti-Hypertensives

- ACEI: Lisinopril, Ramipril others
- ARB: Valsartan, Losartan, others
- Beta-Blockers: atenolol, metoprolol, carvedilol, others



#### Common Anti-Hypertensives

- Calcium Channel Blockers- Amlodipine Verapamil Diltiazem, others
- Diuretics- Hydrochlorothiazide, Chlorthalidone, spironolactone, others



# **Hypertension Treatment**

- ACEI, ARB, thiazide diuretic, dihydropyridine calcium channel blockers (i.e., nifedipine, amlodipine) are all choices for initial therapy(all shown to reduce CVD in DM)
- ACEI and ARB medications are initial drugs of choice for HTN in DM if albuminuria or proteinuria
- "Split dosing" one med in AM and one med in PM may work better
- NOTE: this is a guideline change
- Be sure to check potassium levels, serum creatinine, and eGFR



### **Hypertension Treatment**

- Multiple-drug therapy is generally required to achieve BP targets
- Combinations of ACE inhibitors and ARBs and combinations of ACE inhibitors or ARBs with direct renin inhibitors should not be used



#### **Hypertension Treatment**

• "An ACE inhibitor or ARB, at the maximumly tolerated dose indicated for BP treatment, is the recommended first-line treatment for hypertension in patients with diabetes and urinary albumin-to-creatinine ratio ≥300 mg/g creatinine or 30-299 mg/g creatinine. If one class is not tolerated, the other should be substituted."



#### Resistant Hypertension

 Patients with hypertension who are not meeting BP targets on three classes of antihypertensive medications (including a diuretic) should be considered for mineralocorticoid receptor antagonist therapy



#### **Older Adults**

- Treatment of hypertension to individualized target levels (i.e., <150/<90) is indicated in many older adults</li>
- Risk (i.e., falls, dehydration, bradycardia, polypharmacy)
   vs. benefit in a given individual



## Pregnancy

- Statins, ACE, ARB contraindicated
- BP usually methyldopa
- Be sure to talk about this preconception or if not using contraception
- In pregnant patients with diabetes and preexisting hypertension who are treated with antihypertensive therapy, BP targets of 120-160/80-105 mmHg are suggested in the interest of optimizing long-term maternal health and minimizing impaired fetal growth



# Diabetic Kidney Disease

- Characterized by proteinuria
- Prevalence 15-40% in type 1
- Prevalence 5-20% in type 2
- More common in African Americans, Asians, and Native Americans
- Associated with risk of CVD



# Kidney Disease Management

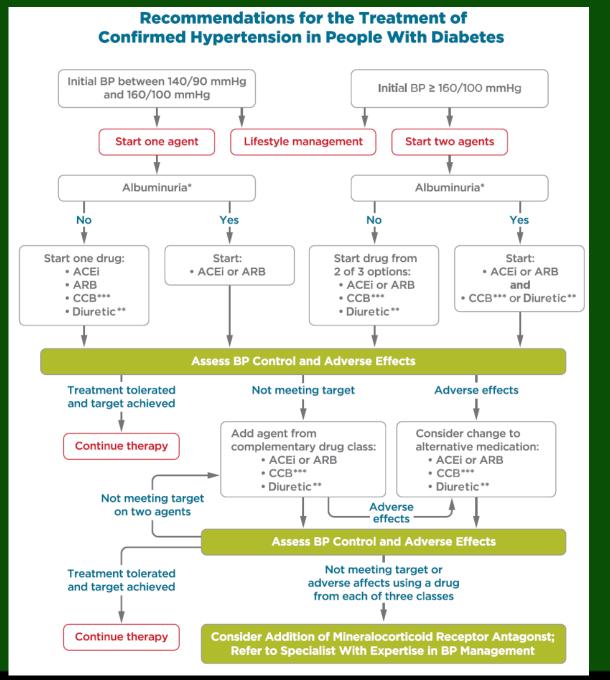
- ACEI or ARB for albuminuria or proteinuria
- Serum creatinine and creatinine clearance (or GFR) monitoring
- Optimize blood pressure to target <140/<90</li>
- Optimize blood glucose control (i.e., A1C <7) for appropriate patients
- Nephrology referral if eGFR<30, uncertain diagnosis, difficult to manage or rapid progression



# ACEI/ARB in Diabetes

- Not prescribed for the diagnosis of diabetes
- Used for hypertension and/or albuminuria/proteinuria in the absence of hypertension







# Non-pharmacologic Treatment of Hypertension in Diabetes



# Lifestyle Management

 "For patients with BP >120/>80, lifestyle intervention consists of weight loss if overweight or obese; a Dietary Approaches to Stop Hypertension(DASH)-style dietary pattern including reducing sodium and increasing potassium intake; moderation of alcohol intake; and increased physical activity"



# Physical Activity: Recommendations

- Children and adolescents with diabetes or prediabetes:
  - 60 min/day or more of moderate- or vigorous-intensity aerobic activity, with vigorous muscle-strengthening and bone-strengthening activities at least 3 days/week
- Most adults with type 1 and type 2 diabetes:
  - 150 min or more of moderate-to-vigorous intensity aerobic activity per week, spread over at least 3 days/week, with no more than 2 consecutive days without activity



# Physical Activity Recommendations

- Adults with type 1 and type 2 diabetes:
  - 2-3 sessions/week of resistance exercise on nonconsecutive days.
  - decrease the amount of time spent in daily sedentary behavior. Prolonged sitting should be interrupted every 30 min for blood glucose benefits, particularly in adults with type 2 diabetes.
  - Flexibility training and balance training are recommended 2–3 times/week for older adults with diabetes. Yoga and tai chi may be included based on individual preferences to increase flexibility, muscular strength, and balance.
  - Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals.



# Goals of Nutrition Therapy

- To promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve overall health and to:
  - Achieve and maintain body weight goals
  - Attain individualized glycemic, blood pressure, and lipid goals
  - Delay or prevent the complications of diabetes
- To address individual nutrition needs based on personal & cultural preferences, health literacy & numeracy, access to healthful foods, willingness and ability to make behavioral changes, & barriers to change



# Diet, Physical Activity & Behavioral Therapy: Recommendations

- Diet, physical activity and behavioral therapy designed to achieve >5% weight loss should be prescribed for overweight and obese patients with T2DM ready to achieve weight loss
- Such interventions should be high-intensity (≥16 sessions in 6 months) and focus on diet, physical activity and behavioral strategies to achieve a 500 - 750 kcal/day energy deficit



#### **Tobacco Cessation**

- All persons with diabetes should stop tobacco and ecigarette use
- Appropriate counseling and pharmacologic resources should be used



#### Cases



#### Case #1

- 40 year old male with type 1 diabetes diagnosed age 16
- On pump/CGM
- No co-existing diabetes complications except for non-proliferative diabetic retinopathy
- A1C 7.2, lipids target, serum creatinine 0.9, GFR 90, chemistries otherwise normal, normal urine albumin
- BMI 30, BPx2 148/96, 152/94
- "Never had high blood pressure before", most previous target
- What next?



#### Case #1

- Would want confirmatory values on other days
- Suggest ambulatory BP's, come to clinic and have nurse check
- BP monitor prescribed
- Elevated BMI and A1C, renewed lifestyle efforts, see dietician and diabetes eduator, increase activity



- 56 year old Hispanic female
- Type 2 diabetes diagnosed 6 years ago
- Had pre-existing hypertension and dyslipidemia
- Diabetes complications of retinopathy and neuropathy
- BMI 36, BPx2 156/100, 159/96, pulse 96



- Medications:
  - Metformin 1000mg BID,
  - Saxagliptin 5mg daily
  - Glipizide XL 10mg daily
  - Hydrochlorothiazide 25mg daily
  - Atorvastatin 40mg daily
  - Aspirin 81 mg daily



- Labs
  - Lipids at target, on appropriate statin
  - Minor LFT elevations (NAFLD)
  - Serum creatinine 1.2 (normal <1.3), GFR 56 (normal >60)
  - A1C 7.4
  - Urine albumin 110 (normal <30)</li>

What now?



- Clearly has uncontrolled hypertension, needs another agent
- Has albuminuria, so ACEI or ARB recommended
- Other consideration- tachycardia, could be neuropathic
- Be sure to check serum creatinine, GFR, potassium, urine albumin after ACEI or ARB start
- What if urine albumin worsened, serum creatinine increased and/or GFR decreased?



- Other considerations:
  - Revisit lifestyle, consider meds that would promote weight loss (SGLT-2 inhibitor, GLP-1 agonist- would stop DPP-IV inhibitor, consider stop glipizide)



- 64 year old white female
- Type 2 diabetes for 20 years
- Hypertension well treated
- BMI 28, blood pressure 126/78
- Lab A1C 6.6, normal chemistries, lipids target, urine albumin 40 (normal <30)</li>



- Medications
  - Aspirin 81mg daily
  - Lisinopril 20mg daily
  - Hydrochlorothiazide 25 mg daily
  - Atorvastatin 20mg daily
  - Metformin 1000mg BID
  - Basal insulin 38 units daily
  - GLP-1 agonist daily or weekly
    - (could consider combo basal insulin/GLP-1)



 Patient has subsequent myocardial infarction, discovered to have 3 vessel disease, ends up with coronary artery bypass graft (CABG)-presented with dyspnea on exertion

Now what?



- Should be on medications known to benefit in CVD- so, keep ACEI, could keep diuretic
- Normally would add beta-blocker such as metoprolol
- Cardiac rehab-educate or recurrent symptoms or lack thereof
- Dietician
- Diabetes educator
- Maybe dual platelet therapy
- Would go on more intensive statin therapy



- 78 year old white female, Long Term Care resident x 2 years post stroke (no atrial fib) with significant left sided weakness and mild cognitive impairment (still involved with own decision making)
- Type 2 diabetes x 22 years
- Hypertension, dyslipidemia, hypothyroidism, osteoporosis, history of falls, diabetic kidney disease with proteinuria, depression



- Medications
  - Sitagliptin 25 mg daily
  - Basal insulin 14units daily
  - Valsartan 40mg daily
  - Hydrochlorothiazide 25mg daily
  - Rosuvastatin 10mg daily (maximally tolerated)
  - Aspirin 81mg daily
  - Levothyroxine 50mcg daily
  - Citalopram 10mg daily
  - Metoprolol 25mg daily



- BMI 24, BP 160/92, pulse 74
- Labs
  - -A1C7.6
  - Creatinine 1.3, GFR 32, electrolytes normal
  - Lipids target
  - TSH normal
  - Urine 3+ protein

Falls have become more frequent despite usual fall precautions.....



- Many possible reasons for fall- stroke history, SSRI, other unknown etiology (bradycardia, thyroid, hypoglycemia, etc)
- Orthostatic BP 110/50
- Should consider orthostasis in this elderly person with diabetes even with elevated resting BP



- Should stay on ARB with diabetic kidney disease and proteinuria, but maybe move to nighttime dosing, consider decrease or stoppage of diuretic
- Balance keeping on BP meds with CVD benefit (ARB, HCTZ, beta-blocker) vs orthostasis and falls



#### Other Considerations



#### Other recommendations

- Why is the ADA recommendation different that ACC/AHA of <130/<80?</li>
- ADA reviewed available evidence for studies including persons with diabetes



### Blood Pressure Studies-Persons with Diabetes

Clinical trial	Population	Intensive	Standard	Outcomes
ACCORD BP (16)	4,733 participants with T2D aged 40–79 years with prior evidence of CVD or	Systolic blood pressure target: <120 mmHg	Systolic blood pressure target: 130–140 mmHg	<ul> <li>No benefit in primary end point: composite of nonfatal MI, nonfatal stroke, and CVD death</li> </ul>
	multiple cardiovascular risk factors	Achieved (mean) systolic/diastolic: 119.3/64.4 mmHg	Achieved (mean) systolic/diastolic: 133.5/70.5 mmHg	<ul> <li>Stroke risk reduced 41% with intensive control, not sustained through follow-up beyond the period of active treatment</li> </ul>
				<ul> <li>Adverse events more common in intensive group, particularly elevated serum creatinine and electrolyte abnormalities</li> </ul>
ADVANCE BP (17)	11,140 participants with T2D aged 55 years and older with prior evidence of CVD or multiple cardiovascular risk factors	Intervention: a single-pill, fixed-dose combination of perindopril and indapamide	Control: placebo	<ul> <li>Intervention reduced risk of primary composite end point of major ma α ovascular and microvascular events (9%), death from any cause (14%), and death from CVD (18%)</li> </ul>
		Achieved (mean) systolic/diastolic: 136/73 mmHg	Achieved (mean) systolic/diastolic: 141.6/75.2 mmHg	6-year observational follow-up found reduction in risk of death in intervention group attenuated but still significant (142)
HOT (143)	18,790 participants, including 1,501 with diabetes	Diastolic blood pressure target: ≤80 mmHg	Diastolic blood pressure target: ≤90 mmHg	<ul> <li>In the overall trial, there was no cardiovascular benefit with more intensive targets</li> <li>In the subpopulation with diabetes, an intensive diastolic target was associated with a significantly reduced risk (51%) of CVD events</li> </ul>
SPRINT (144)	9,361 participants without diabetes	Systolic blood pressure target: <120 mmHg	Systolic blood pressure target: <140 mmHg	<ul> <li>Intensive systolic blood pressure target lowered risk of the primary composite outcome 25% (MI, ACS, stroke, heart failure, and death due to CVD)</li> </ul>
		Achieved (mean): 121.4 mmHg	Achieved (mean): 136.2 mmHg	• Intensive target reduced risk of death 27%
				<ul> <li>Intensive the rapy increased risks of electrolyte abnormalities and AKI</li> </ul>



# Heart Disease and Stroke Symptoms

- Educate patients about heart disease and stroke symptoms
- I have seen patients with fairly advanced disease without a lot of symptomotology
- Large knowledge gaps exist with patients



#### Diabetes meds that may lower BP

- SGLT-2 inhibitors
- GLP-1
- Neither has FDA indication for hypertension



#### Summary

- Hypertension is common in prediabetes and diabetes
- Guidelines that are evidence based exist to manage elevated cardiovascular risk in persons with diabetes
- Know when to refer for hypertension related complications
- Be familiar with medications for hypertension and how they are used for different types of patients



# Questions?



## Thank you for attending the 2018 Hypertension Summit!

Please complete: **Evaluation Form** 

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